

## MAYKA notes

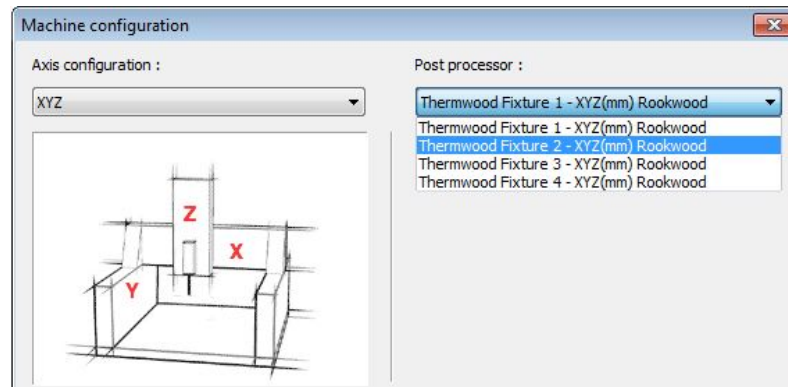
### Suggested steps for Wheelchair cushions

These are suggested reminder steps to use when making a wheelchair seat cushion from scan data made with the Artec Scanner.

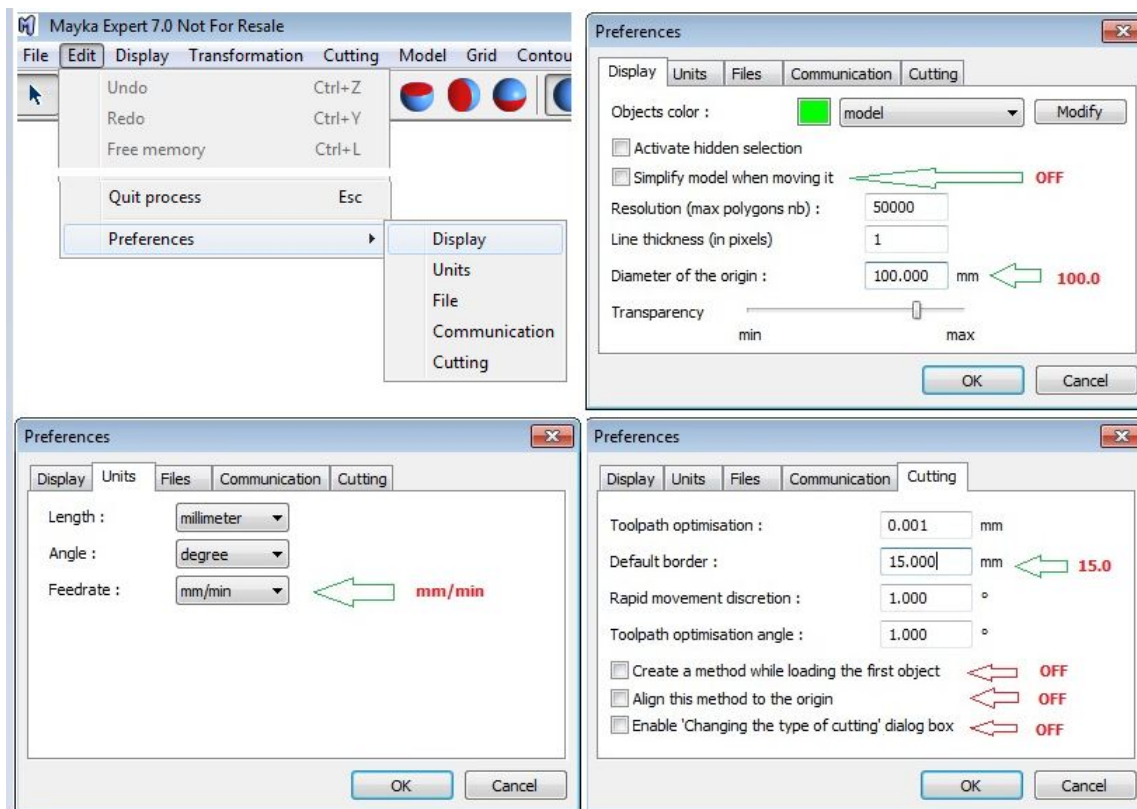
Please refer to the Mayka User Manual for specific explanations. See inside the Mayka software > Help menu > Manual.

Mayka can be used in conjunction with your machine tool suppliers advice on machine operation and safety.

Launch Mayka and check the machine configuration. This is remembered each time you open the software, but it is worth checking.



Some of the preferences that users change are under the Edit menu.

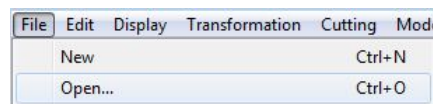


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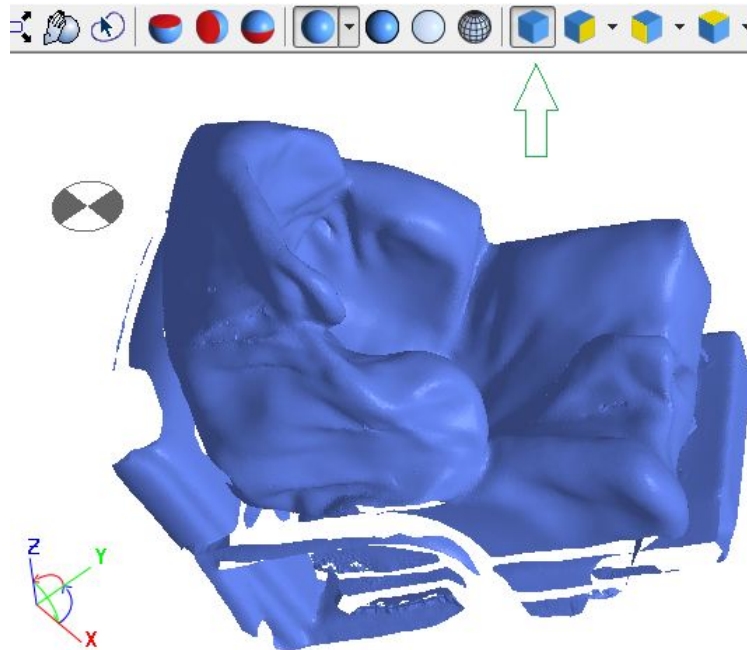
2

### Suggested steps for Wheelchair cushions

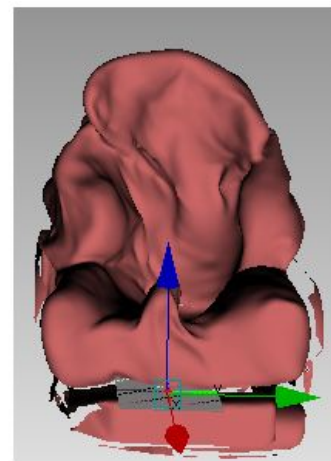
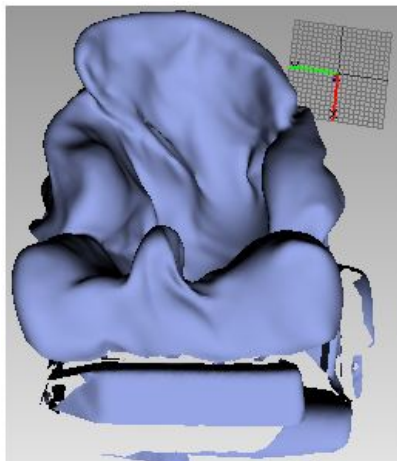
Open your Scanned file. (STL or OBJ exported mesh from Artec Studio)



Select the Perspective View to orientate your view to see clearly. Any view is valid to make it easier to see to make a good orientation to the main XYZ origin.



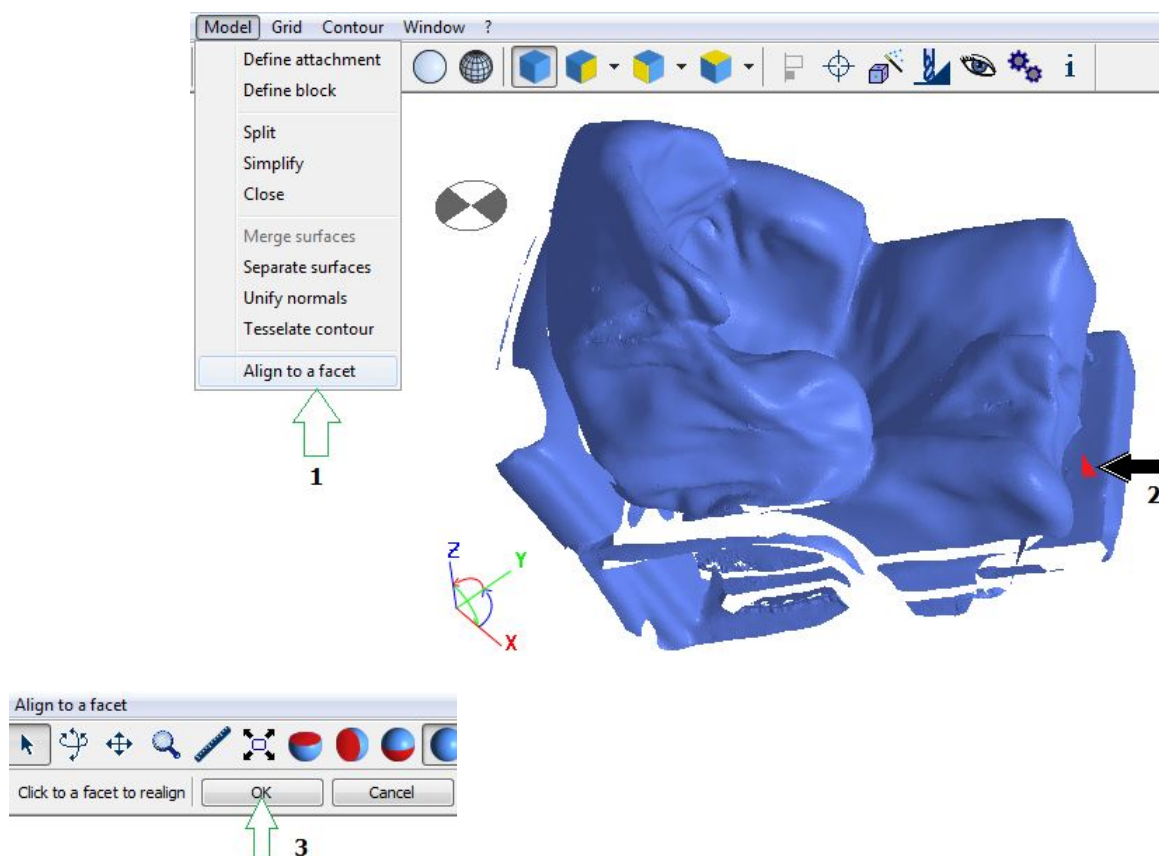
*Note if you have already orientated the model in the Artec Studio software, shown below, you will not have to do the following Align to facet procedures in Mayka. This is the Artec method.*



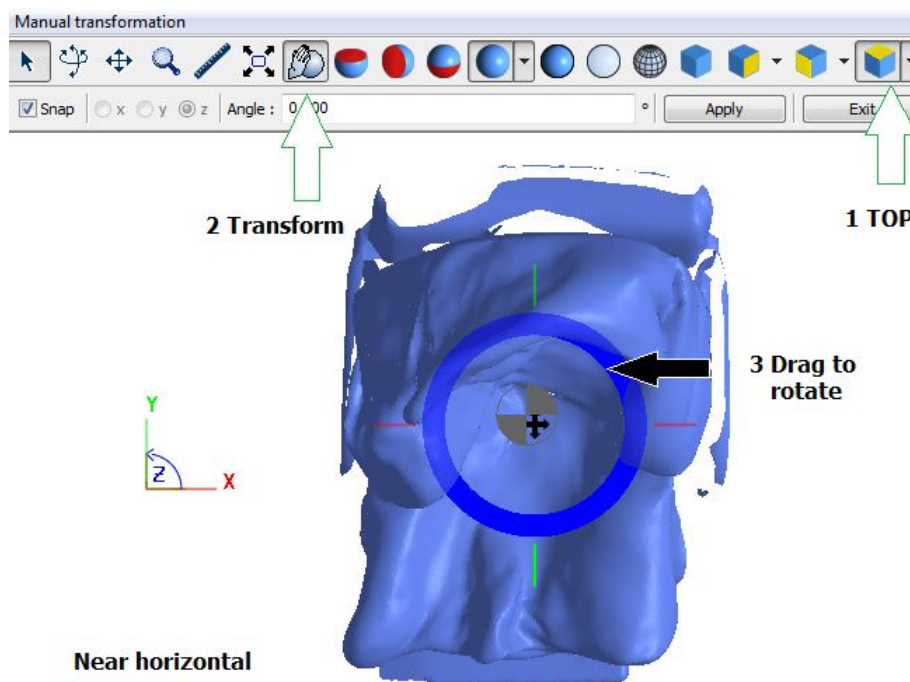
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Mayka “Align to facet”, then click on the horizontal facet you want and click the OK.



In the Top view, use the Manual transformation tool to adjust the model to the orientation you want.

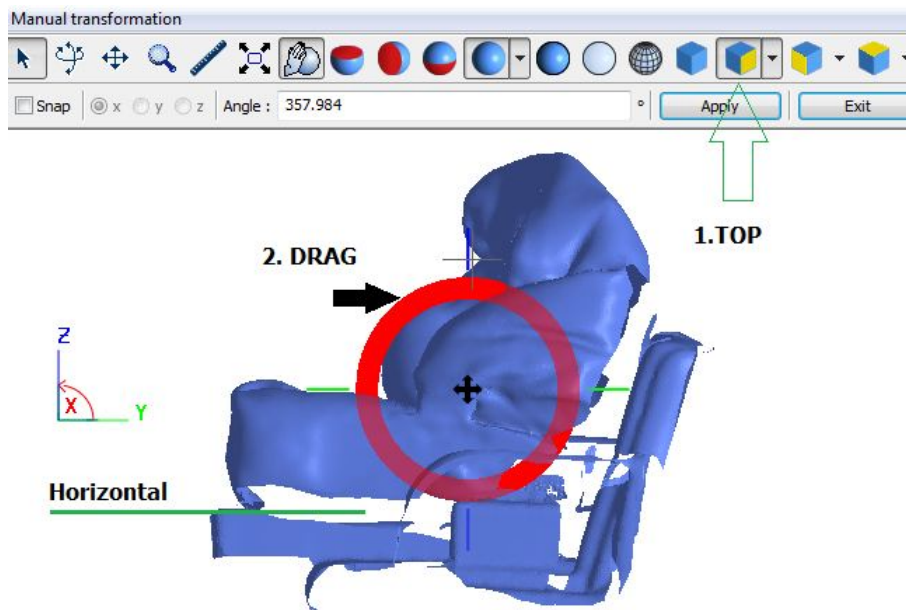


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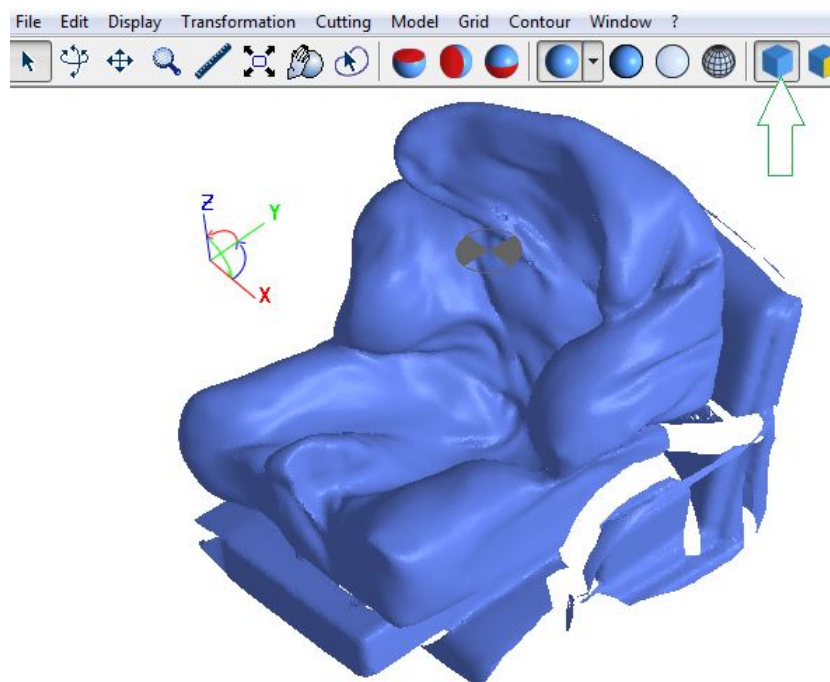
4

### Suggested steps for Wheelchair cushions

You can check and refine the positioning in the other orthographic views with relation to the datum XYZ.



In our example, it looks like this.

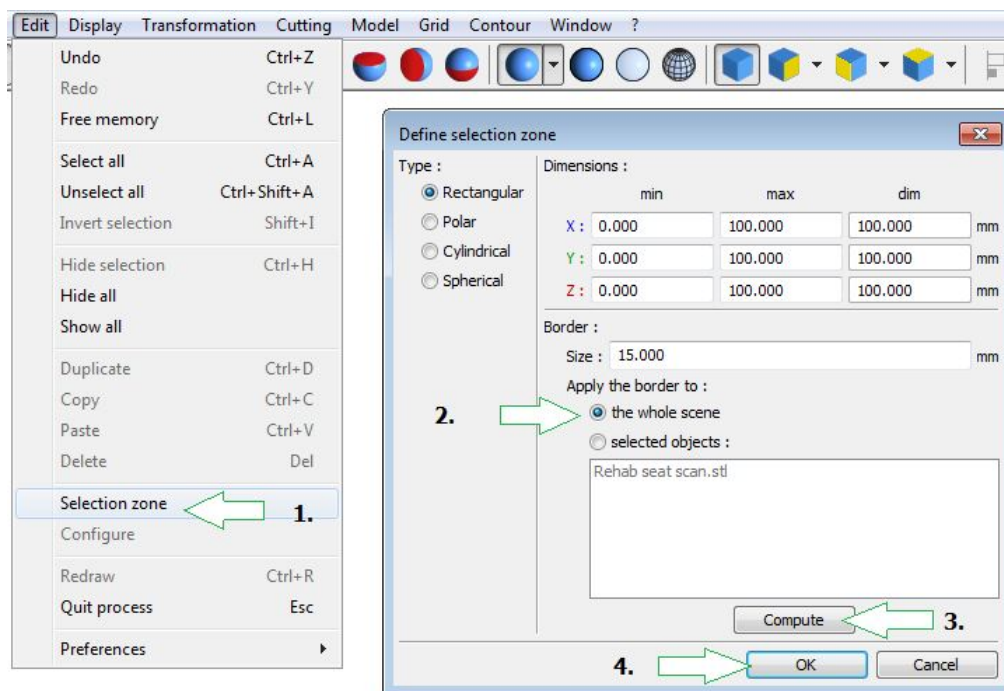




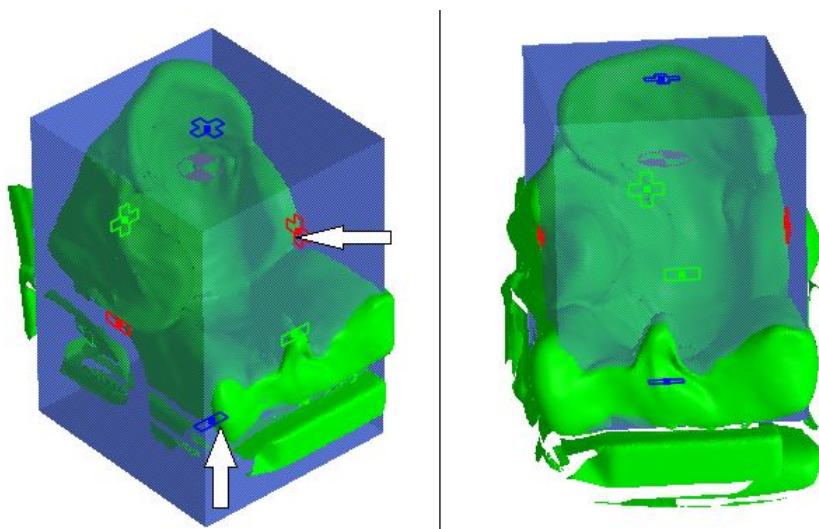
## MAYKA notes

### Suggested steps for Wheelchair cushions

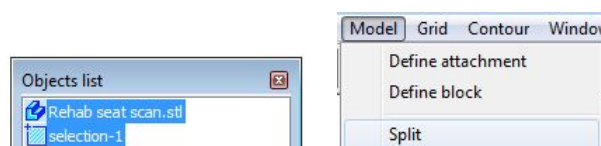
Now create a “selection zone” that you can use to split the model into the parts you require for milling in foam.



You can use the selection zone in many ways and positions to allow you to split the model. To adjust zone with mouse, drag the XYZ markers as required. In this example we are thinking of cutting the inside selection zone from the outside, but the way you work is up to you.

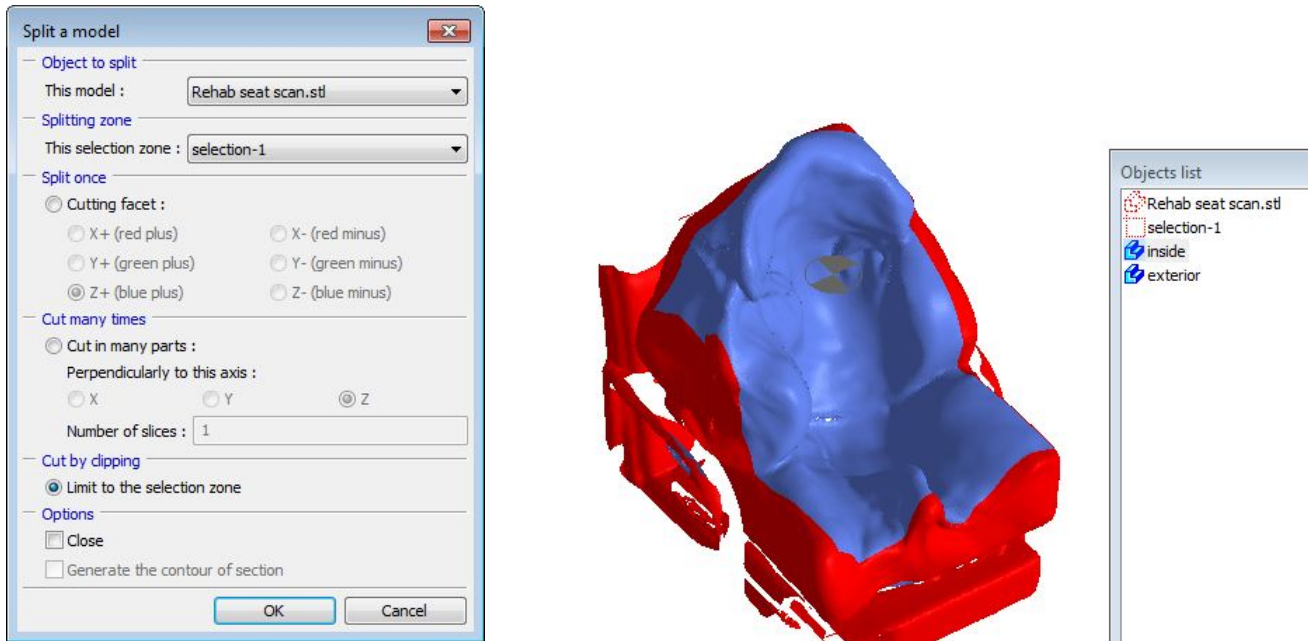


Select the model and the selection zone in the object list then choose Split from the model menu.

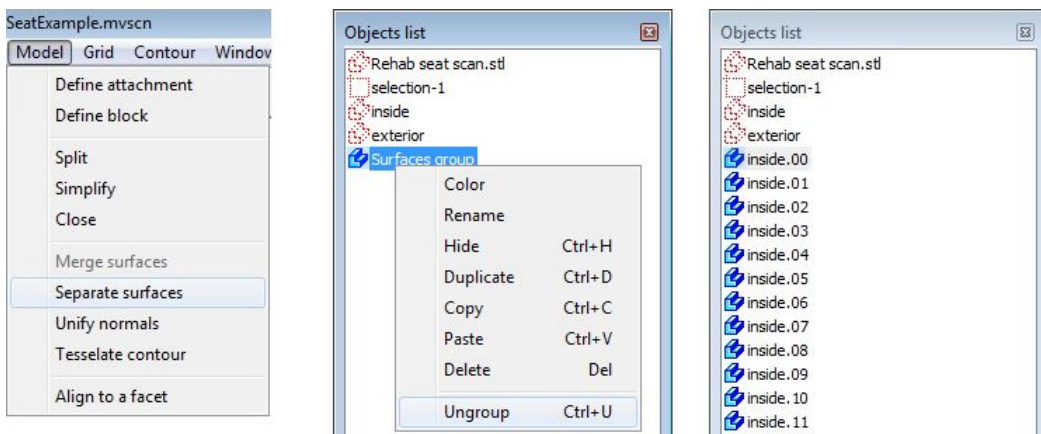


## Suggested steps for Wheelchair cushions

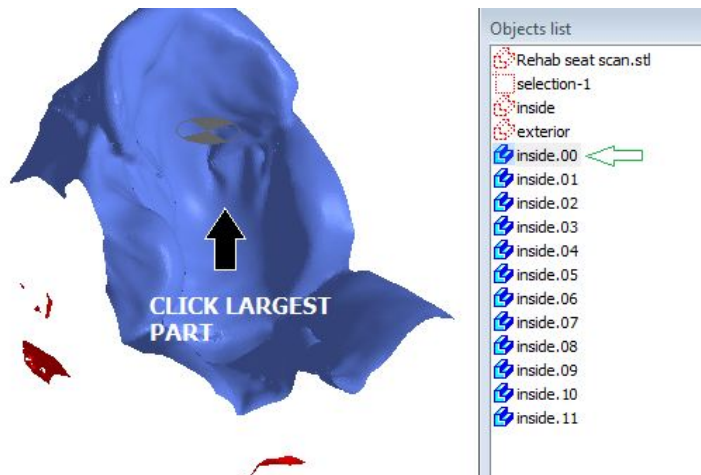
As we want to extract the inside of the zone, we used Cut by Clipping. The model is duplicated from the original and split into inside and outside models. We want the Inside in this example.



You can hide the Exterior by clicking its blue icon in the object list. Then select the Inside and use the Model menu > Separate surfaces command.

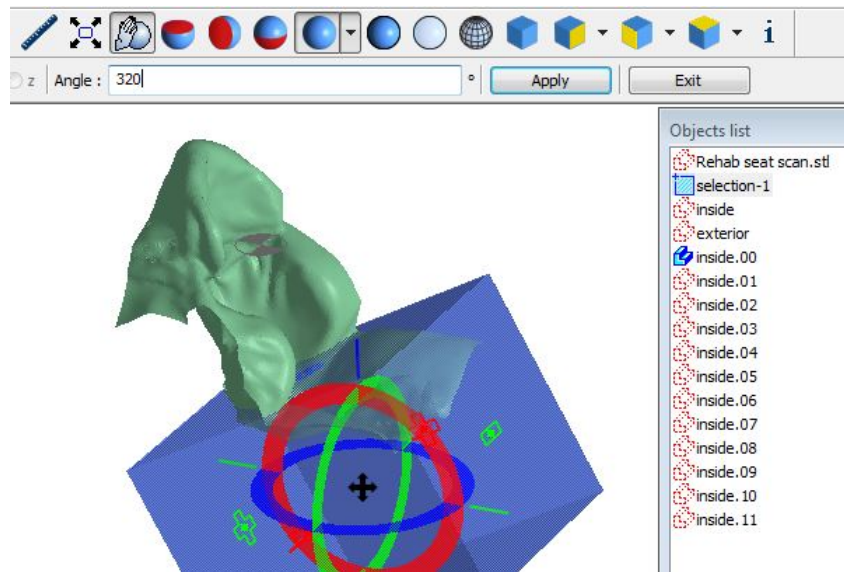


To select the largest part you want to keep, you can click on it and it will be shown on the screen and object list. You can now hide or throw away the other parts you do not need.

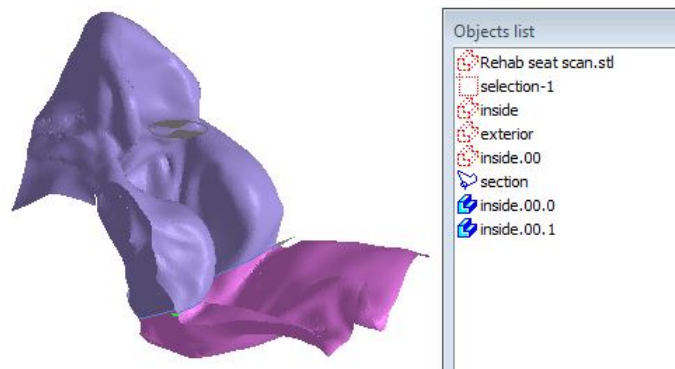
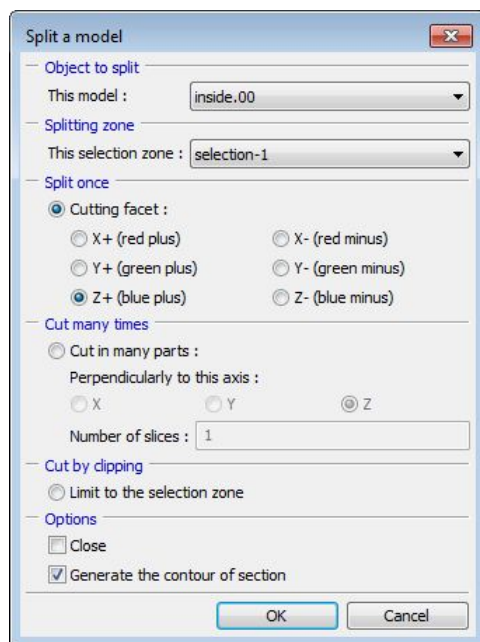


## Suggested steps for Wheelchair cushions

You can use the various Split option for cut the model. Here a common problem is to split the seat section from the back, however, you may create open sections.



Use the split command with the respective selected model section and the selection zone you want. So we can make a filled section for the cut of the seat we are going to create contours where the split takes place. You can have as many selections zones as you want if it is easier for you.



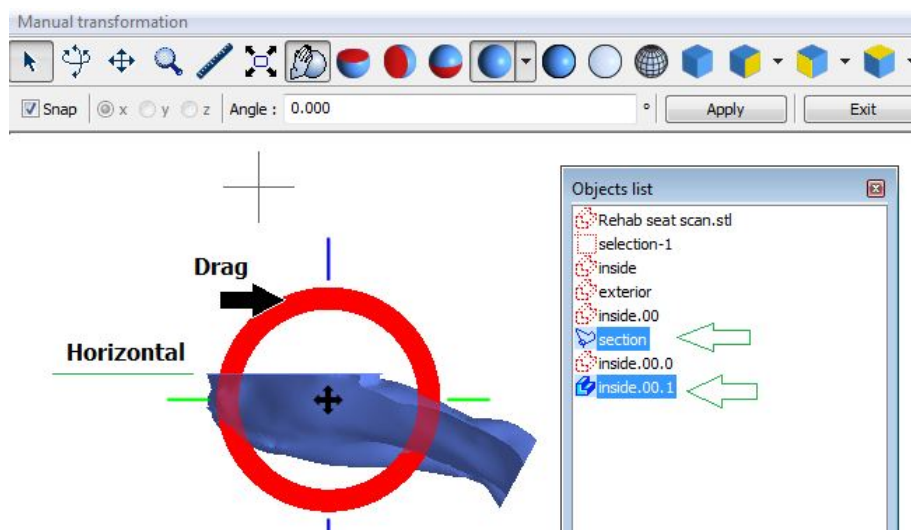
Here the Inside.00 has been split and the section contours created.

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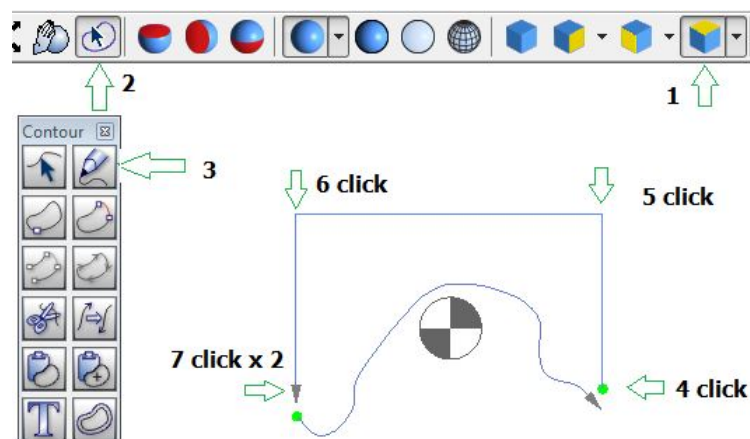
8

### Suggested steps for Wheelchair cushions

Select the contour section and the seat model and rotate both in an orthographic view to the horizontal position. The reason we do this is that we can only manual draw contours from the top view.



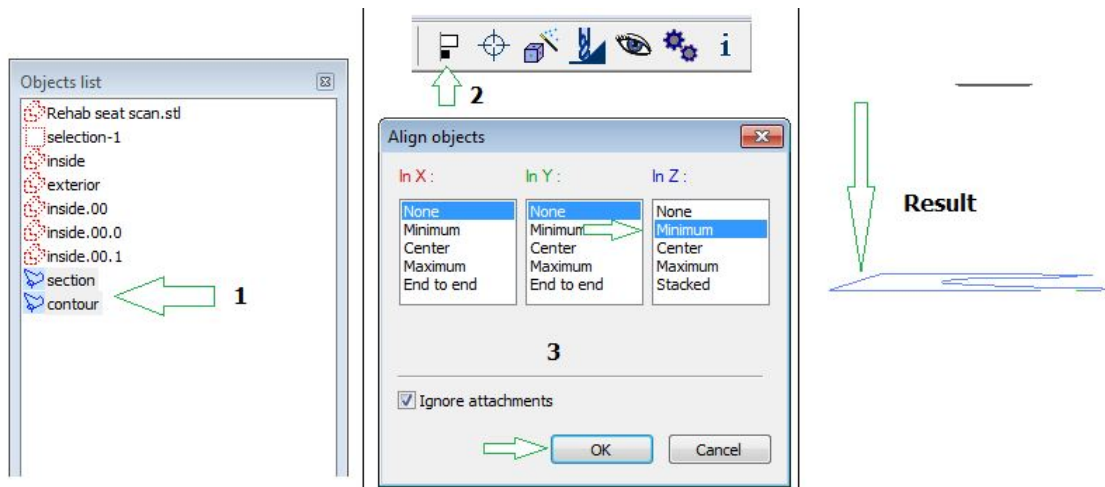
How in the top view with the contours tools you can create the other bits of contour you want to make a closed shape.



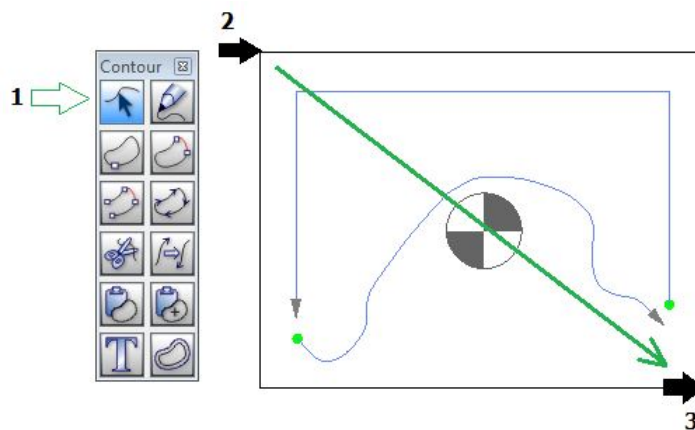


## Suggested steps for Wheelchair cushions

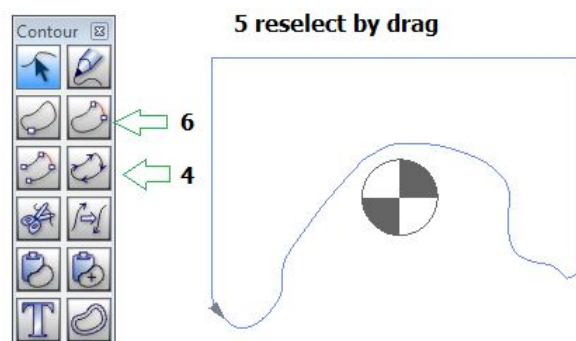
As the contours are on different levels, align the contours in Z by selecting them in the object list. Remember the first one nearest the top of the list stays still whilst the others align to them.



Now with the contour selection tool, select contours. This can be in the object list or by dragging over them with the mouse.

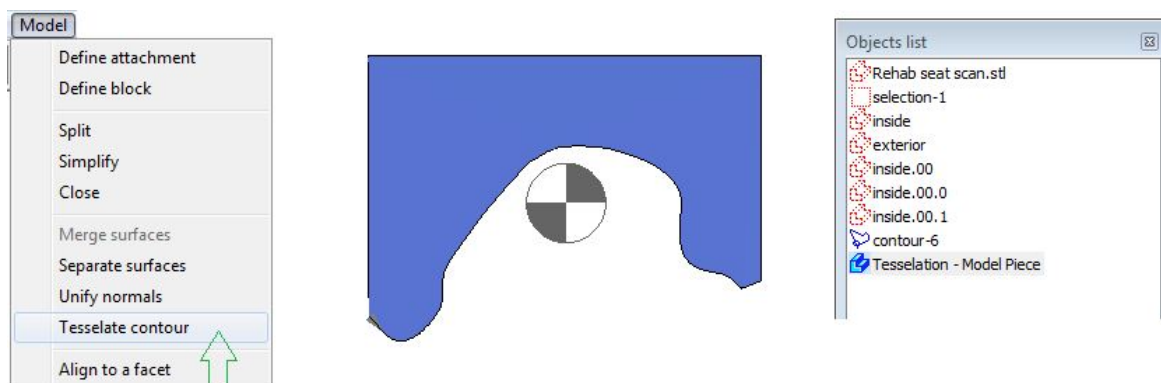


Click Auto Append and one end will join. Reselect them and click Close. If you have multiple contours you made need to make some further edits, like changing their direction etc before they will join.

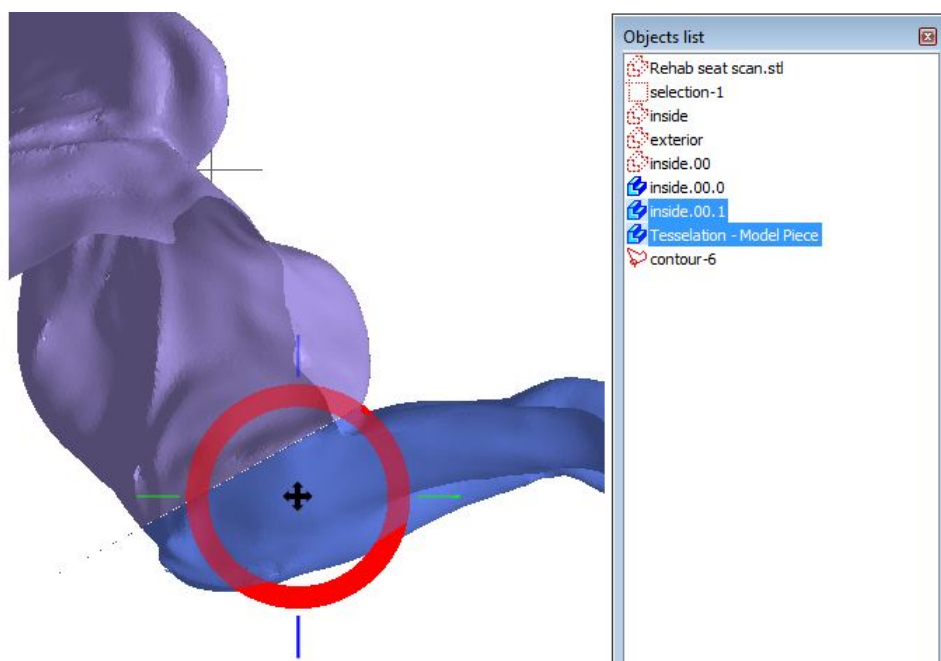


## Suggested steps for Wheelchair cushions

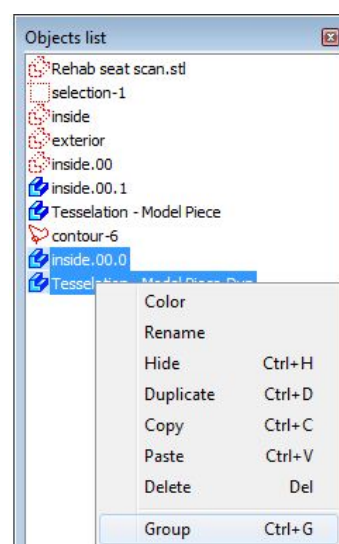
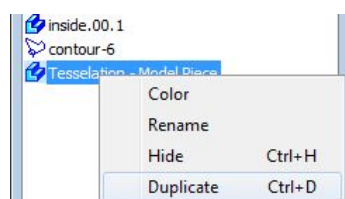
Now we are going to convert the contours in to a slab of model. To do this, select the contours and then use the Tessellate contour function. The contour will be filled with a model object we can use for the cut of the seat.



Make the back section of the seat visible in the object list. Then with the manual transform realign the Seat and the Tessellation to the back. Only use the axis lines in side view to move the seat and contour, then you will not make in error rotations.



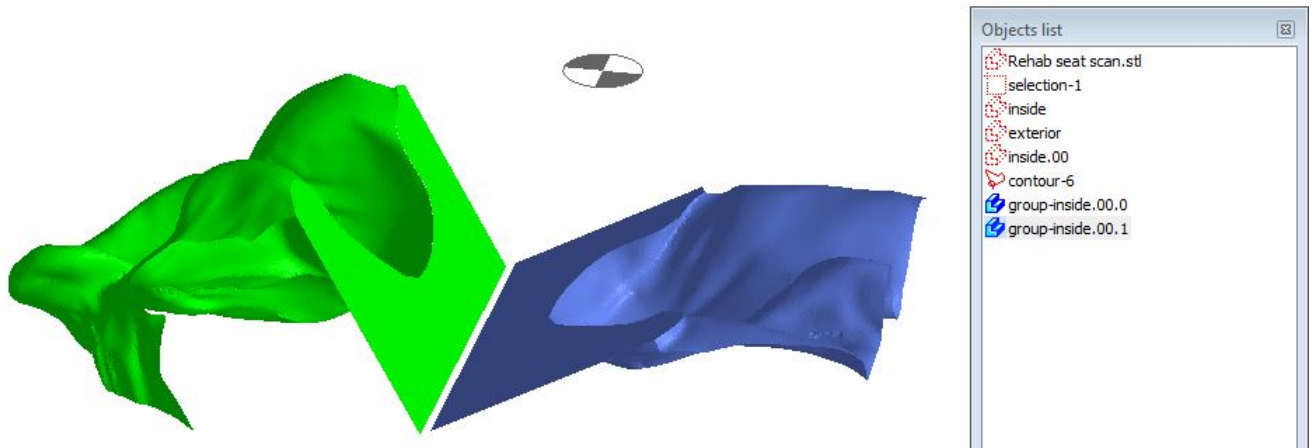
In the object list duplicate the Tessellation model. One for the seat and one for the back, then group each pair so you have a tessellation with the seat and the back.



**Suggested steps for Wheelchair cushions**

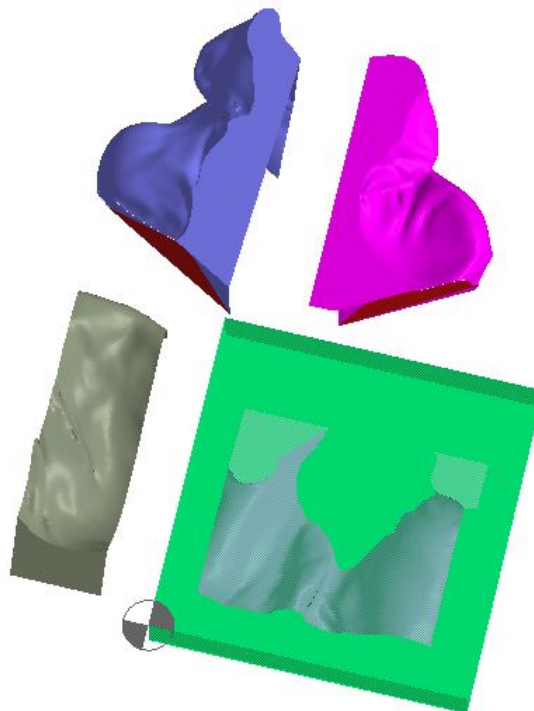
With the manual transform move the back away from seat. Here we have a seat and a back each with its tessellated section, which when milled will allow you to easily build the final cushion.

*Note: Ideally make any transformations in an orthographic view as this will make it easier for you to align them when performing milling.*



Make other splits as you require, using previous processes.

*Here is a suggestion we made. However, it will most likely depend on the size of the raw foam you decide to use. In this case, then double click on your selection zone and adjust the sizes accordingly.*

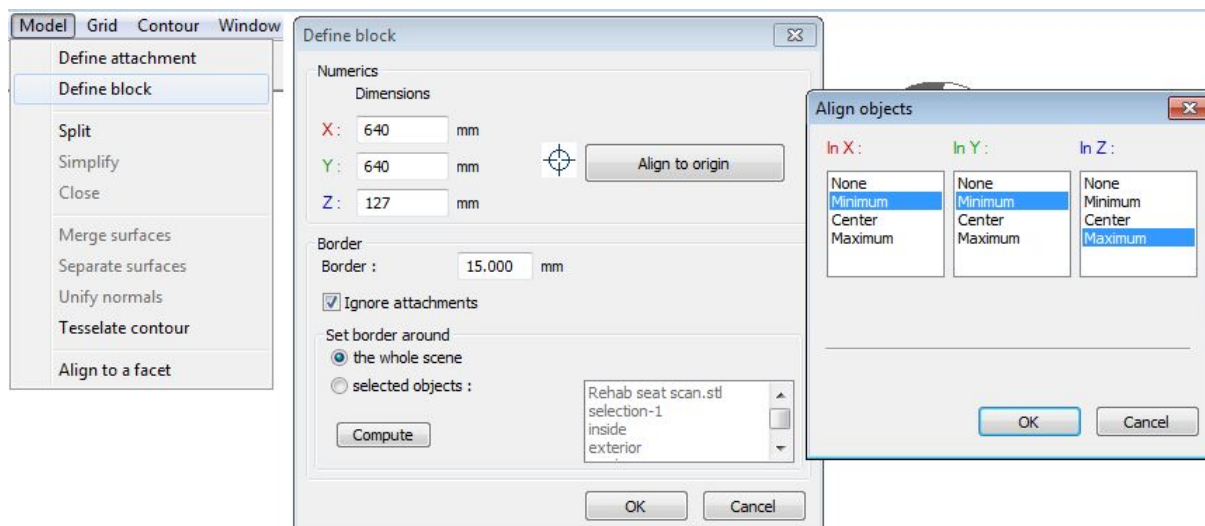


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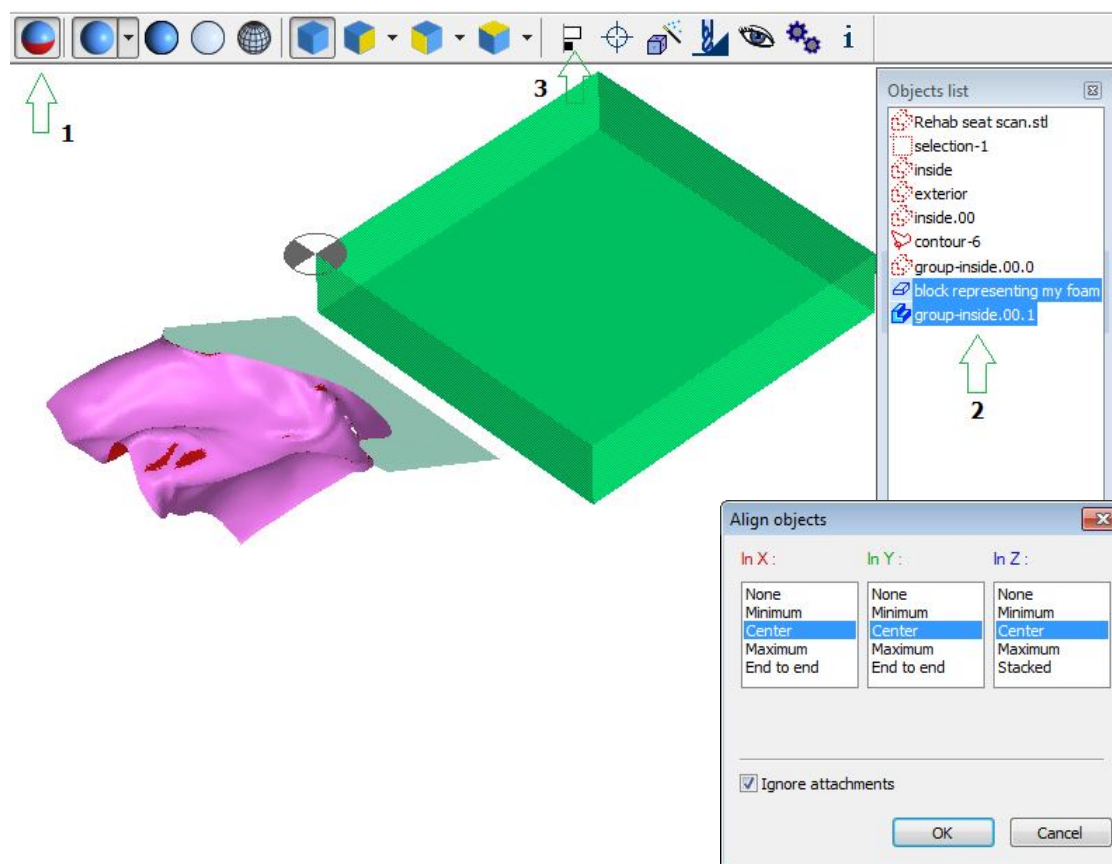
## MILLING

The key is to define a block for the foam with a datum point for the machine and then position each part in the block, one at a time to perform the milling processes. Depending on the machine capacity, cutter sizes, spindle power and the resistance of the materials, you will most likely need to perform a roughing pass and then a finishing pass.

Define Foam Block for milling set up at the size you require.



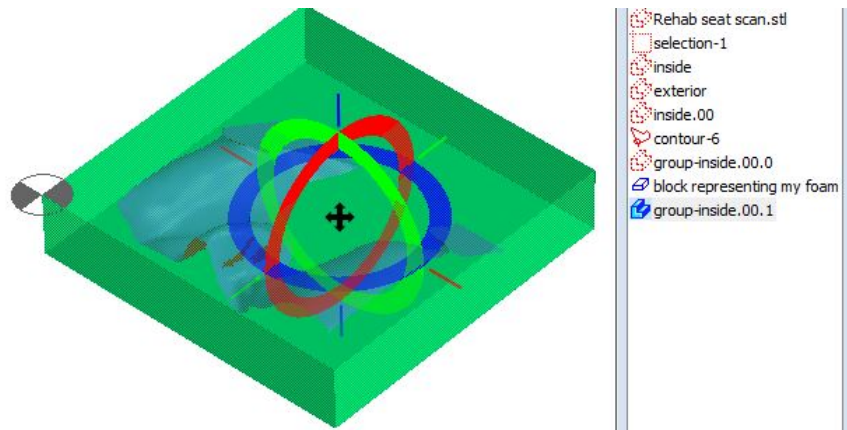
Align the model to the block by selecting them in the object list. Remember the first one nearest the top of the list stays still whilst the lower item will align to the block. Choose the position you require.





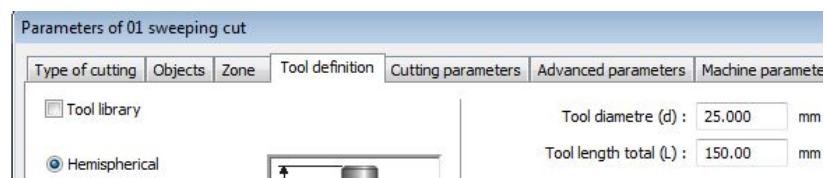
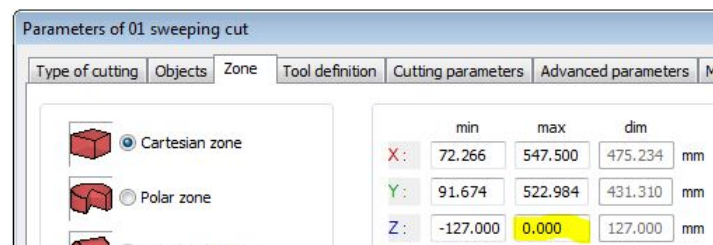
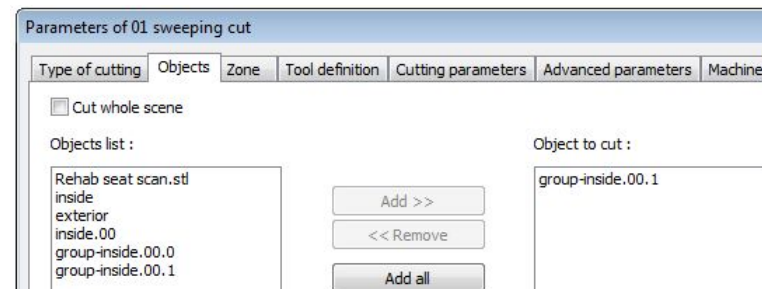
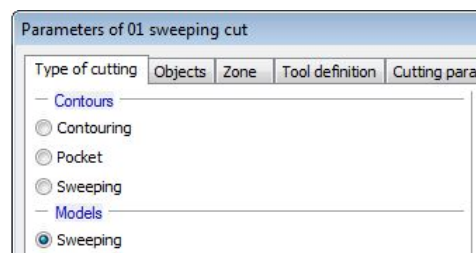
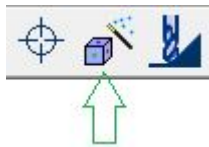
## Suggested steps for Wheelchair cushions

Refine the positioning with the manual transformation tools.

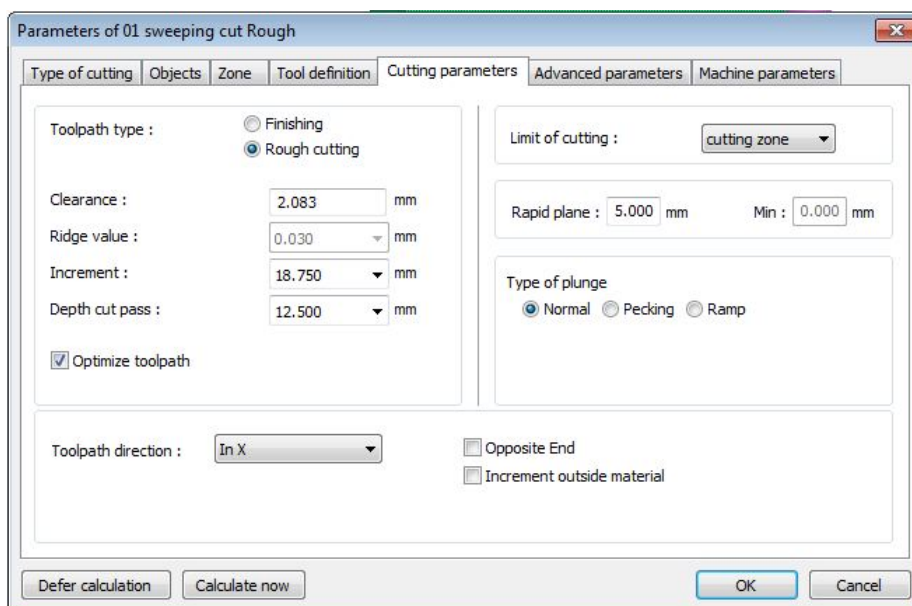


Now create your first machining method. In this example we are going to use roughing first.

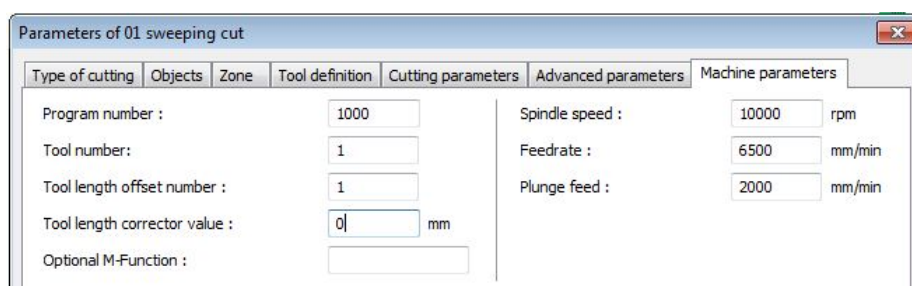
*Note from the machine supplier please check the cutting parameters that apply to the machine, tools and materials. Enter them in the parameters.*



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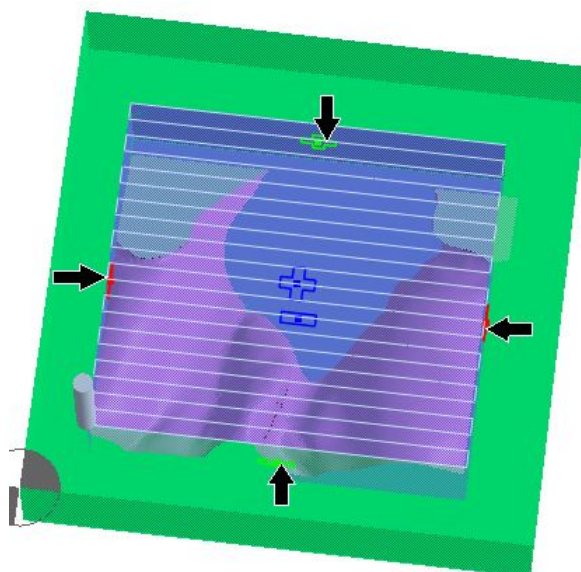


*Advance parameters are not needed*



You can change through the different tabs in the parameters as you like, then Click OK on the bottom of the parameters window.

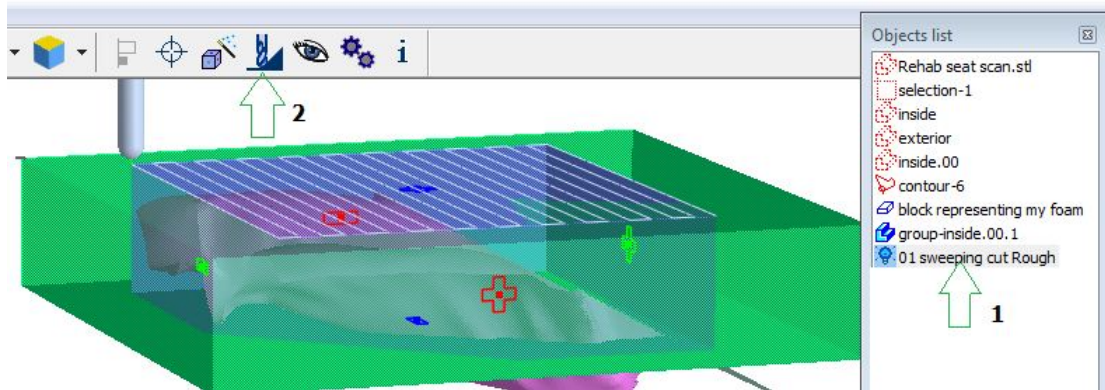
You probably will need to adjust methods cutting zone as required by you.



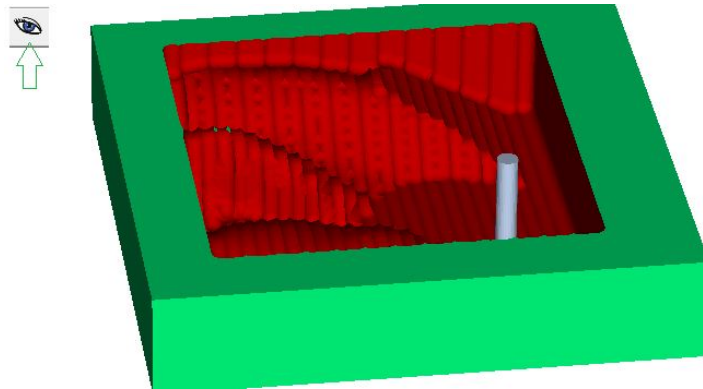
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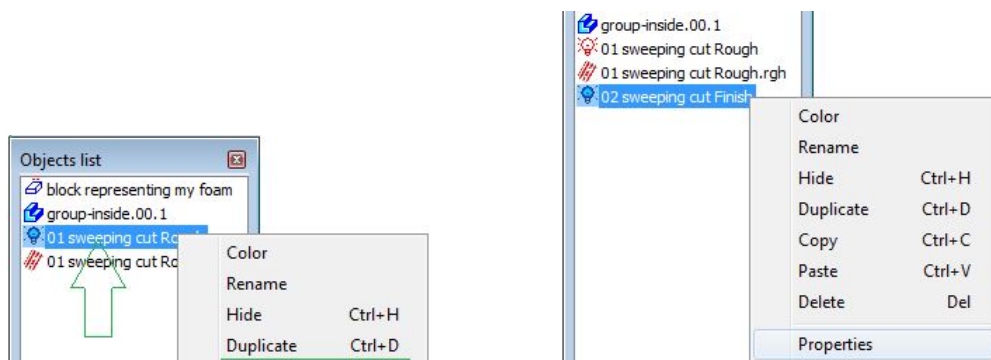
To calculate the toolpath, select the method in the object list and then click the cutting icon. Wait for the toolpath to be calculated.



You can select the toolpath in the list and the block to perform toolpath simulation if you want.

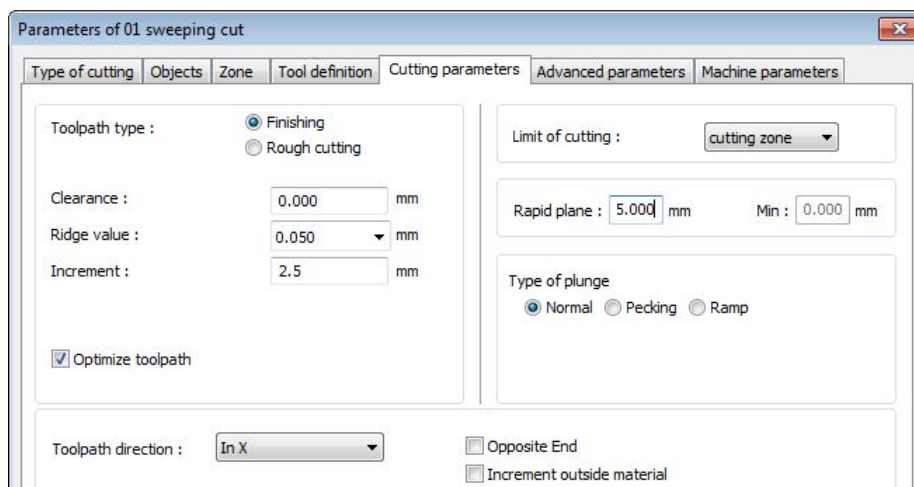


To save you work, right click the method you used for roughing and duplicate. Then right click and you can rename it to say finishing and then right click again (or double click) to change the properties.



## Suggested steps for Wheelchair cushions

You can check all the parameters and if your using the same tool for finishing as you used for roughing, then the only parameters that need changing are the cutting parameters.

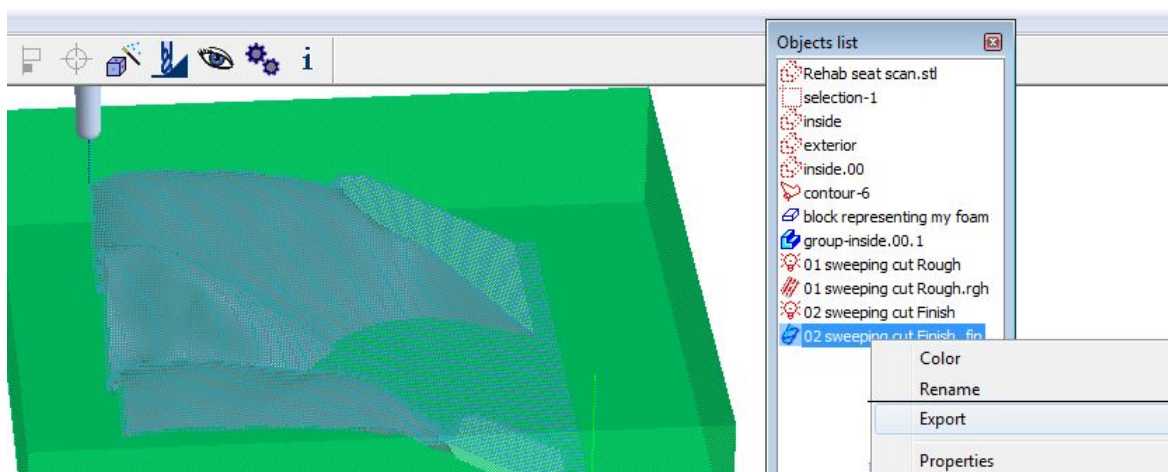


You can click OK and then use the cutting icon as before, or if your happy to proceed you can click calculate now. The parameters will close and the toolpath will be calculated.

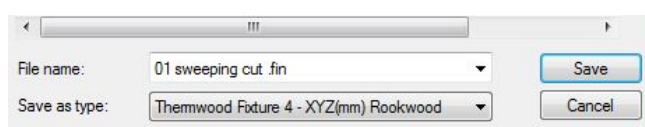


Remember to save your work.

So when you are ready you can export the toolpaths to the machine format you require. Select the toolpath file you want in the object list, then either use file > export menu, or right click the toolpath name and choose export.



Select the machine format in the save as type section, check the filename and click save.

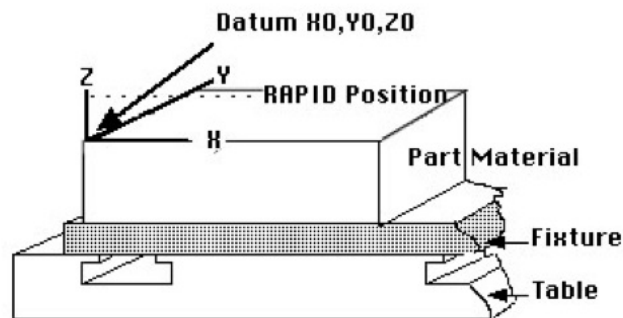


**Save your work.**



**Suggested steps for Wheelchair cushions**

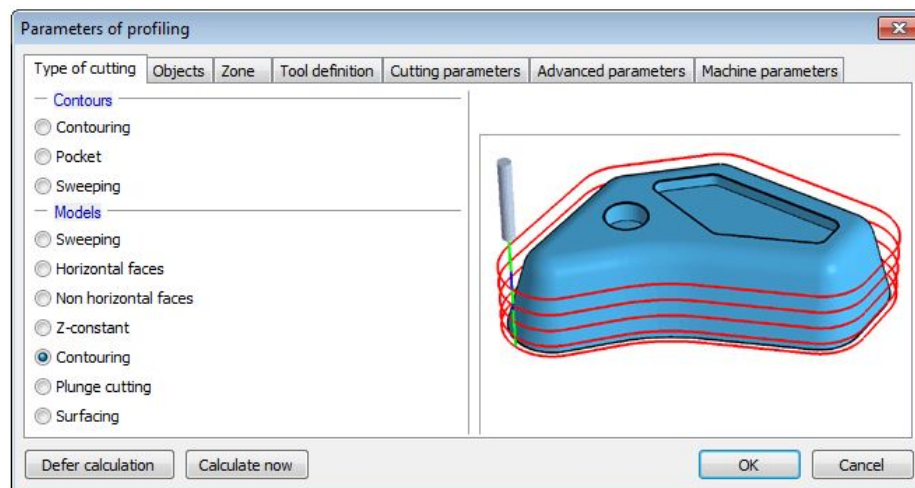
When the machine is set as instructed by your machine tool supplier, you can copy the Mayka toolpath file you have made to the machine and check the machine datum corresponds to the datum you used in Mayka. Something like this.



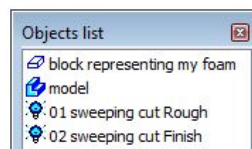
Always abide by the machine tool suppliers and your facilities health and safety procedures. Mayka does not have eyes to see the machine, so it will follow what you have told it.

**Notes**

With some parts you may need to profile the cushion. To do this, use the Contouring method as detailed in the user manual.



If you always use the same block and methods then saving a scene with these in will retain the parameters you set.



Open this scene and choose save as, then change the model file. Adjust any zones if required and you can calculate the methods for new toolpaths.

...end.

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